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ACHARYYA PRAFULLA CHANDRA RAY

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ACHARYYA
PRAFULLA CHANDRA RAY
(SIR P. C. RAY)
AND
HIS MANY-SIDED ACTIVITIES.

BY
AN ADMIRING PUPIL

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M. K. Ray.

PUBLISHERS' FOREWORD.

We have much pleasure in laying before the public this short account of the life and activities of Acharyya Prafulla Chandra Ray from the pen of one who has been an intimate pupil and friend of the great master for over sixteen years. The modest author wants to pay this his humble tribute to his Guru, but wants to remain under the quiet cover of anonymity; but we are sure it will be found that his account is rich with a fresh and intimate charm which is rarely met with in the various other accounts of the life of the illustrious savant that are before the public. We, the publishers, are also honoured to have the privilege of having our name connected with this graceful offering to one who, amidst his other multifarious activities, was our guide and our inspirer when this firm was brought into existence, and who has favoured us with his helpful encouragement ever since. We hope this little book will meet with the appreciation of our countrymen.

CHUCKERVERTY, CHATTERJEE & Co., LTD.

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15, College Square, Calcutta.

INTRODUCTION.

The name of Acharyya Prafulla Chandra Ray is familiar to every one, old and young, learned and ignorant, not only in Bengal but all over India. In fact it has become a household word throughout this vast continent. For a long time I have been thinking of writing an account of his achievements, but have fought shy of the task, lest I should prove unequal to it. Of late, however, some pamphlets dealing with his life have been published both in Bengali and English. It is not my purpose here to follow the course adopted in them and give a chronological summary of the chief events of his life; what I propose to do is to place before the reader a short account of his glorious achievements in the field of science as well as in many other spheres of life, so that he may form an idea of his versatile genius, concentrated application and wonderful capacity for work. Examples of such religious devotion to self-imposed duties, such utter contempt of personal comforts and such ardent zeal to raise one's own country in the estimation of the world outside by untiring and ceaseless work

in different spheres of activity throughout a long life, may not be very rare in the Western World, but in the enervating atmosphere of enslaved and poverty-stricken India, a life like that of Acharyya Prafulla Chandra is certainly a thing calculated to fill one with amazement. One cannot fail to profit by the reverent contemplation of such a life. I am afraid, however, that the world at large have not been able to form definite ideas about his character and activities. And this is because he has not found quite the right sort of biographers. For one must be at the same time a scientist, an educationist, an industrialist, a social reformer, and a politician in order adequately to perform the difficult task of giving an account of his life. Though, indeed, I cannot claim many or almost any of those qualifications still I can vouch for a very close contact with him for the last sixteen years; and still my relations with him are unbroken and intimate. I, therefore, think that I can without presumption, try to help the public to form a proper estimate of his many-sided activities and this I intend to do by giving my own experiences about the daily life of this illustrious man.



ACHARYYA PRAFULLA CHANDRA RAY

*David Baran Mukherjee—
1 College Row - Calcutta*

Acharyya Prafulla Chandra Ray and His Many-sided Activities.

CHAPTER I.

THE CAUSE OF CHEMISTRY AND CHEMICAL INDUSTRY.

Prafulla Chandra's chief title to fame, recognised both here and abroad, is his successful pursuit of chemistry, a course which he fixed for himself early in life and which he has followed during a long career with unflagging zeal and to such good purpose that he now, by universal consent, occupies a place in the very front rank of the world's great chemists.

**As a Student of
Chemistry.**

But the success he has achieved as a chemist, though very great, is no adequate measure of the vigour and range of his intellect. One must take into account the difficulties he had to contend against, in order to form a right estimate of his genius and grit.

A chemist of his reputation and achievements may not be considered at the present time to be a figure rising far above others in countries like France, England and Germany. For it is quite in the fitness of things that a chemist like Prafulla Chandra or even a greater chemist should be born at the present age in the lands bearing the hallowed memories of immortal savants like Newton, Faraday, Lavoisier, Gerhardt, Prout, Berthelot, Gay Lussac, Dumas, Stas, Scheele, Berzelius, Liebig, Wöhler, Hoffman and Mitscherlich. In the present century the appearance of scientists of the eminence of Ramsay and Rutherford in England, of Pasteur and Madame Curie in France and of Werner and Fischer in Germany may not strike one as anything extraordinary; on the contrary, we may regard them as merely carrying on the bright traditions of the celebrated chemists of the past. But in India which has so long been under foreign domination and where the mystic transcendentalism of the Vedas and Vedantas and subtleties of the Nyayas and Smritis prevailed for so many centuries, it is rather strange that a chemist of Prafulla Chandra's calibre could accomplish what

he has done in such an unfavourable and even hostile environment. Holding aloft the torch of science, he marched boldly forward through the surrounding darkness. His disciples have followed the master and are now gaining recognition and fame in the chemical world. They are treading in his footsteps, working faithfully in the field opened by him and earning their rewards. But Prafulla Chandra fought alone against overwhelming odds in the beginning. And it was a manly fight that resulted in a glorious victory. It strikes one with wonder to see him even now at the age of sixty-two engaged in chemical investigations with the able assistance and co-operation of his pupils. He works in his Laboratory from 9 A.M. to 4 P.M. with an hour's interval for meal and rest and would not deviate from this routine even during holidays. Only during the summer vacation he takes rest from his arduous labours for a month or so, and spends his time in his native village in the district of Khulna with friends, relatives and co-villagers. Except these few days in summer his laboratory is kept open from morning till evening throughout the

year. Even on Sundays one finds him hard at work.

He has not only established his own reputation as a chemist and added to the glory of his country by his

As a Founder of a School of Chemistry in Bengal. chemical investigations, but

he has taken great pains to lay the solid foundation of a school of chemistry in Bengal so that in future India might continue to contribute to the world's stock of scientific knowledge and establish her claim to a high and recognised place in the world of science. And, in fact, it is a matter of gratification to him that many of his pupils have been earning reputation both here and abroad. This new school of chemistry composed of young scholars of Bengal and founded and guided by him, will, no doubt, fulfil the expectation it has thus far raised and lead the country towards a glorious goal. The renowned French scholar and Indologist, Sylvain Levi, once truly remarked that "the Laboratory of Sir P. C. Ray is the nursery of the young chemists of New India." In this laboratory he has been able to maintain a succession of workers and here his method of teaching and

investigation is being transmitted year after year from master to pupil and the spirit of scientific research is destined to pass from generation to generation. His pupils have all been imbued with an ardent devotion to science by the moral contagion of his example. "His countenance like brightest Alchemy will change to virtue and to worthiness." He has till now made over a hundred original contributions to scientific journals abroad some by his unaided efforts and some with the collaboration of his pupils. It is doubtful if any chemist in any other country excepting England, France and Germany, has been engaged in scientific investigation for such a length of time and has published so many original papers. Even the past two crowded years have found him discovering so many surprisingly new facts in connection with the valency of platinum and gold that it may be said without any exaggeration that he would have been able to establish his reputation as a chemist by these two years' work alone.

The high estimation in which his work and services in the field of chemistry are regarded by the renowned scientists of

England, can be best illustrated by reproducing here the concluding words of a speech made by the late Prof. Sir William Ramsay at the end of a lecture by Prof. Ray at one of the evening discourses at the Chemical Society in Burlington House, London :—

“We had the privilege and pleasure of listening to-night to that eminent Indian chemist whose name is already familiar to us for his most interesting researches on nitrites, and who unaided has kept the torch burning for years in that ancient land of civilization and learning.” *

Sir W. J. Pope in his capacity as President of the Chemical Society wrote to Dr. Ray congratulating him on the occasion of his receiving the “well-merited mark of distinction” (Knighthood) in the following words,—

“It is the sincere hope of the members of the Council that you may long be spared to continue your unique work in connexion with the development of chemical research in India.”

* B. B. Dey, Presidency College Magazine, March, 1917, pp. 338—339.

Another notable achievement of his is the "History of Hindu Chemistry," a perfectly original contribution to the history of chemical science.

As an Author of the "History of Hindu Chemistry."

This monumental work has been acclaimed as the best of its kind by the most celebrated authorities of Europe. Prafulla Chandra has exhibited in this book a masterly grasp of facts, wonderful perseverance, admirable linguistic acquirements, a rare power of investigation and a deep knowledge of the Sanskrit literature. There was no systematic history of ancient Hindu civilization, specially as regards the knowledge of science acquired by the Hindus. In order, therefore, to give a co-ordinated account of the chemical knowledge of the ancient Hindus, he had to make a thorough study of the various Sanskrit works (often in manuscript) on the systems of philosophy, *tantras* and Ayurveda or the medical science. This epoch-making work also would have sufficed to establish his reputation in the Chemical World. Not even the meagrest account of the long forgotten knowledge of the ancient Hindus about the science of chemistry could be found in any modern book on the history of chemical science. It was

left for Acharyya Prafulla Chandra to bring to light the scientific labours of the ancient Hindus and thus restore a forgotten chapter to the history of ancient Hindu civilisation. And well might India feel proud of this patriotic achievement.

His reputation as a very successful and popular teacher of chemistry does not yield to that as an investigator or a historian.

As a Teacher of Chemistry.

Those who have had the good fortune of sitting at his feet as his pupils bear eloquent testimony to the fact that he, by his simple and humorous method of teaching, could instil a thirst for knowledge into the minds of even the ordinary students. He could make the ordinarily dull atmosphere of a chemistry class absorbingly interesting by the charm of his manners and the brilliance of his exposition. This is the secret of his success in creating a new school of chemistry out of the young enthusiastic scholars of Bengal. That he has been able to transmit to his pupils the love he feels for chemistry is chiefly owing to his putting his whole heart into the matter when he was engaged with them in the laboratory or the class room.

Else, they could not have been inspired with his spirit which has enabled many of them to gain recognition as chemists of a very high order both in this country and in Europe. The master loves his pupils as his own sons and feels pride in their success. He takes care to keep himself in the back ground but is always eloquent in making known the achievements of his pupils. I have many times heard him say that his pupils have won greater renown than himself and express his sentiment by quoting the Sanskrit saying “सर्वत्रजयमन्विच्छेत् पुत्रादिच्छेत् पराजयम् ।” i.e., “one should court victory everywhere (else), but defeat from one’s own son (or pupil).” In fact it is not too much for him to regard his famous pupils as his sons seeing that they are the products of his genius—his intellectual heirs, so to speak. Indeed, I have seen him on many occasions simply dance with joy embracing one or other of his pupils who have earned recognition abroad by some original work. This reminds me of the celebrated French chemist Gay Lussac. The veteran master also used to dance a waltz out of joy with his favourite German pupil Liebig (destined later in life to attain world-wide fame),

whenever he would make a new discovery. Prafulla Chandra has been laying the foundation of chemistry here in India as the old masters did in Europe over a century ago. His pupils are his friends as well, and it appears that no incident of his life is hidden from them. They are his constant companions both in work and recreation. He is so proud of them that he often tells us that none of his students need go to foreign countries for degrees or recognition—they are on the other hand quite capable of establishing their reputation as chemists by their achievements here. The results have amply borne out this statement. Among his pupils Prof. Meghnad Saha, D.Sc. (Cal.), Prof. Nilratan Dhar, D.Sc. (Lond.), Prof. Jnanendra Chandra Ghose, D.Sc. (Cal.), Prof. Jnanendra Nath Mukherjee, D.Sc. (Lond.) and Prof. Rasiklal Dutt, D.Sc. (Cal.) have won European reputation as investigators of high merit. Both Dr. Ghose and Dr. Saha have no foreign degrees, nor do they hanker after any. Their work has been proclaimed by eminent scientists of Europe and America to be of great intrinsic value.

He has equally unstinted admiration for

those who as his right-hand men and associates have helped to build the chemical works referred to later on and he is eloquent in his praise and admiration of the services rendered in this direction by his pupils, Messrs Raj Shekhar Bose and Satis Chandra Das Gupta. Indeed, he has often been heard openly to declare that but for the initiative, whole-hearted devotion, resourcefulness and business capacity of these two chemists the Bengal Chemical and Pharmaceutical Works would never have attained its present prominent position. His pupils are again equally devoted to him. Dr. Nilratan Dhar, who now adorns the chair of chemistry, University of Allahabad, in an article in the University Magazine observes :—

“I desire to record some of the great
 “achievements of a man whose master-
 “mind has not only exerted a wonderful
 “influence on the development of chemical
 “science in our country, but whose suc-
 “cessful labours are also interwoven with
 “much of the progress which has taken
 “place in India’s education and industrial
 “regeneration. Although the name of Sir
 “P. C. Ray now belongs to so many

“branches of national activity, I would
 “claim his glory for our own because he
 “is essentially a chemist. Before begin-
 “ning the sketch of his life I would like
 “to remark that I sat at his feet for eight
 “years and learnt from him a great deal.”
 Continuing he says :—

“It is well known that unless a man
 “be really great, he cannot produce a good
 “class of pupils. Sir P. C. Ray takes so
 “much interest in the progress and future
 “well-being of the students that he always
 “attracts a large band of young enthusias-
 “tic workers around him and imparts to
 “them his enthusiasm for the subject.
 “He is the founder of a large school of
 “chemists in India, his students are filling
 “chairs of chemistry in every part of the
 “country and he may be looked upon as
 “the intellectual father of most young
 “Indian chemists. It is not too much to
 “say that the great munificence of the two
 “lawyer-sons of Bengal in the founding of
 “the College of Science with an endow-
 “ment of about 30 lacs may be attributed
 “to the painstaking, steady and whole-
 “hearted devotion of Sir P. C. Ray to the

“cause of science and education extending
“over more than 30 years”.

Another pupil of his, Mr. Francis V. Fernandes, M.Sc., thus begins and concludes an article in the *Presidency College Magazine* on “The Indian School of Chemistry.”

“It was that savant himself who
“bitterly deplored the ‘intellectual torpor
“or stagnation’ of his country; and there
“was left to him the noble task of regene-
“rating Indian chemistry. It is he who,
“to the nation of metaphysicians and
“visionaries, has added the lustre of a
“school of experimental and inductive
“scientists. The man who has accom-
“plished these things cannot be ignored
“by his countrymen. India offers the
“tribute of respect to her illustrious son,
“the founder of the Indian School of
“Chemistry”.

“Such is the history of a great scienti-
“fic movement in this country. The
“leader has carried out his life’s mission.
“He has founded the school. He has
“trained a host of chemists and now he
“may rest fully assured that the work he
“has started will be carried on in its

“details. The development of the school
 “he has created he may now safely trust
 “in the hands of his pupils. They will
 “prize it as their most valuable legacy,
 “and loyally hand it down to posterity.”

“What an awakening for India!
 “After centuries of scientific stagnation
 “she has now recovered her former posi-
 “tion in the chemical world. May the man
 • “who has effected this change be long
 “preserved to us! May he long inspire
 “his disciples to greater deeds! All we
 “can do now is to pay a sincere tribute of
 “affection, of admiration, of respect to the
 “great benefactor and disinterested philo-
 “sopher.”

On the whole we may regard Prafulla Chandra as the Liebig or the Wöhler of India. In fact, his way of living and his effort for the foundation of chemistry in India might well be compared with those of the old master-minds of Europe. Again, his close relationship with his pupils reminds one of the ancient Rishi-Gurus (sages and preceptors) of India. He has been able to some extent to revive the traditions of the Ashramas of ancient India. This is the reason why he has been instru-

mental in inspiring his pupils with a love of chemistry and in maintaining a succession of students of chemistry in Bengal. In him are reflected the nobility of character, scholarly abstinence, renunciation of worldly comfort, and all the saintly qualities of the old Aryan Rishis on the one hand and the love of liberty and equality, so characteristic of the modern sages of the west, on the other. In a word, the noblest ideals of the East and the West meet in him and are harmoniously blended.

It is a general complaint now-a-days that after the retirement of Prafulla Chandra from the Presidency College the succession of young enthusiastic chemists, which was long maintained by him during his service there, has suddenly ceased. It does not imply, however, that an intellectual torpor or degeneration has all on a sudden overtaken the students of Bengal. The fact is that the students first entering into their college career now no longer find any opportunity of coming in contact with a teacher of such inspiring presence as Prafulla Chandra. There are none to fire them with a burning love for chemistry. Lord Ronaldshay, the late Governor of Bengal, in his convocation speech in the

University of Calcutta as its Rector gave expression to this view of the matter when he said :—

“But the University is handicapped
 “in having to confine its teachings to post-
 “graduate students. Let me illustrate
 “what I mean. So long as the University
 “is thus restricted, a teacher of eminence
 “like Sir P. C. Ray has no chance of
 “bringing his influence to bear upon any
 “but mature students who have already
 “obtained their degrees. That consti-
 “tutes a loss both to Sir P. C. Ray himself
 “and to large number of young scientists
 “who might benefit immeasurably from
 “his activity if the system permitted him
 “the wider scope which it is the object of
 “the recommendations of the University
 “Commission to give.”

In what esteem he is held by his pupils will be evident from the following extract from the valedictory address presented to him on the occasion of his retirement from the Presidency College.

“Your place in the College, sir, we are
 “afraid, can never be filled. Men will
 “come and men will go, but where

“else can we possibly expect to find again
 “that sweetness of disposition, that vigour
 “of simplicity, that unwearied spirit of
 “service, that broad-based culture, that
 “wisdom in deliberation and debate which
 “for the space of thirty years or more
 endeared you so much to your pupils?”

“Yours was, sir, indeed, no small
 “achievement. Your way of life, with its
 “distinct Indian traits, recalled us to the
 “sweet and manly days of Indian attain-
 “ment. You have been to us all through
 “a guide, philosopher and friend. Easy
 “of access, ever-pleasant, ever willing to
 “help the poor and needy student with
 “your counsel and purse, living a life of
 “a sturdy, celibate simplicity, with a
 “genuine patriotism not loud but deep,
 “you have been to us an ancient Guru
 “reborn, a light and an inspiration from
 “the treasure-house of old Indian spiritua-
 “lity.”

The reply he gave is equally characteristic
 of the man.

“I hope I shall be pardoned if I fail
 “adequately to give expression to my pent-
 “up feelings—so much I feel embarrassed

“and over-powered at the kind words,
 “nay, eulogistic terms in which you have
 “been pleased to refer to me. I know I
 “should make due allowance for them, for
 “on an occasion like this you are apt to be
 “over-indulgent and forgiving to my many
 “failings and short-comings and equally
 “prone to lay undue stress upon my good
 “points, if you have been able to discover
 “any. However, let that pass. Gentle-
 “men, I have often regarded it as a divine
 “dispensation that my dear friend and dis-
 “tinguished colleague (pointing to Sir J.
 “C. Bose) and my humble self should have
 “been working side by side for close upon
 “thirty years, each in his own department,
 “cheering each other up, through evil
 “report and good; never wavering for a
 “moment in the onward march to our
 “goal, and I trust that the fire which it has
 “been our lot dimly to kindle will be kept
 “burning on from generation to genera-
 “tion of our students, gaining in brilliance
 “and volume and intensity till it will have
 “illumined the whole of our beloved
 “motherland. Perhaps some of you may
 “be aware that I have never cared to set

“much store by what are ordinarily called
 “worldly effects or possessions. If, how-
 “ever, any one were to ask me what
 “treasures I have piled up at the end of
 “my career at the Presidency College, I
 “would answer him in the words of
 “Cornelia of old. You have all heard of
 “the story of the Roman matron, how on
 “one occasion a patrician lady had called
 “on her and was displaying with vanity
 “her ornaments and jewels, and how when
 “she asked Cornelia in turn to bring forth
 “her own jewellery, she (Cornelia) begged
 “to be allowed to postpone her exhibits for
 “a time, and patiently waited till the
 “return of her two sons from school. Then
 “pointing to her boys (famous afterwards
 “as the Gracchi), with conscious pride she
 “exclaimed, “These are my jewels.” I
 “should also Cornelia-like point to a Rasik
 “Lal Datta, a Nilratan Dhar, a Jnanendra
 “Chandra Ghose, a Jnanendra Nath
 “Mukherji, to mention the names of only a
 “few representatives of the devoted band
 “of workers who have gathered round me
 “from time to time.”

I shall next give an account of the efforts

made by him in developing the chemical industries of Bengal. He

**As a Pioneer of
Chemical Industries in
Bengal.**

was sorely afflicted to see the miserable economic condition of the people of Bengal since his return to India from Europe in 1888 after completing his six years' study at the Edinburgh University. He has applied himself wholeheartedly to the noble endeavour of ameliorating the condition of his fellow-countrymen. Both by example and precept he has been proclaiming all along that the salvation of India lies in her industrial regeneration. In his public speeches he never fails bitterly to condemn the indolence of our people to which alone he ascribes our economic ruin. Various articles and pamphlets like "The Misuse of the Bengali Brain", "The Bread Problem" and "Endeavour and Success" etc., dealing with the subject have been published by him. He always makes it a point to hold up before the people the example of the Marwaris, who by their constant efforts and un-flagging zeal for work have become one of the richest classes of India. He has been engaged in many-sided activities calculated to

establish and develop various industries in India leading to her economic regeneration.

Among his multifarious efforts in this direction the Bengal Chemical and Pharmaceutical Works deserves the first mention. Every one acquainted with the history of its development is aware of the fact that it was first started by him with a very small capital and was a modest attempt. Now this Company by his persistent efforts and under his wise guidance, has grown up into a huge manufacturing concern with a capital of 25 lacs, and its fame has travelled far and wide. It is at present an object of pride and glory to Bengal. Thousands of labourers and hundreds of middle-class young men of Bengal have been provided with employments by this Company.

Prafulla Chandra cannot stand the pitiable sight of the young men of Bengal running about nervously for a petty job and having recourse to vile sycophancy at the cost of their self-respect. He is never tired of expressing strong condemnation of the undignified conduct of our young hopefuls and is a very severe critic of our indolent habits. As an instance he always brings to our notice

that all the Railway and Steamer Stations in Bengal are crowded with labourers and coolies imported from Orissa, Behar and the United Provinces, and one seldom meets with a Bengali coolie at any of these places. These people easily earn Re. 1/- to Re. 1/8/- per diem. And it really makes one sad to think of the poor lot of the Bengali peasants—living within a stones' throw of these stations and idly passing away their days, helpless and half starved, afflicted with malaria and emaciated owing to mal-nutrition. The thought of reclaiming these poor people from this vicious habit of indolence has been constantly preying upon the mind of Acharyya Prafulla Chandra. We have often heard him remark that it is a great pity that even the “Pan and Biri” (betel-nut and cheap smoke) shops on the streets of Calcutta have been monopolised by the U. P. people. In a word, practically the entire trade of Bengal has been captured by non-Bengalis.

In his opinion, one of the most serious defects of the Bengali character as regards business is his love for one-man-rule, an evil consequence of which is that most of the Bengali business-concerns are short-lived. The

Bengalis have no faith in each other and are generally jealous. This is the reason why most of the limited companies started by them come to grief in a short time. Where any such companies have flourished it has been mainly due to the efforts of one individual only, either the Managing Director or the Superintendent of the firm. This results in the closing down of their business for want of proper management just after his death or retirement. This defect in the Bengali character prompted Prafulla Chandra to establish in Bengal a school of chemistry which would keep up the study of this science from generation to generation even after the pioneer has retired. The withholding of the blessings of knowledge from the people at large is a defect not to be met with in the present Bengali society alone but was a black spot in the otherwise well-planned Hindu social system of old. Everybody is aware of the fact that in old days knowledge was regarded as the monopoly of only one particular community and even amongst that community there was severe scrutiny in selecting the pupils. The door of the temple of knowledge was not open to all. In other words, there was a caste system even

in the sphere of knowledge, which should be recognised as a birth-right of every human being. The extinction of the knowledge of so many previous arts and sciences of the ancient Hindus is to be solely attributed to this unfortunate practice.

Prafulla Chandra is filled with indignation at the thought of Bengali youths regarding manual labour as derogatory to their prestige and common trades and business as not befitting their education and position in society. In his opinion one must begin from the lowest rung of the ladder if one wishes to succeed in a business. This constitutes the best training for a beginner. But the Bengali youth would take no heed of this excellent advice. The tendency of the ease-loving and indolent Bengali youths is to cast an account of the profit and loss before starting a business, and if it does not bring in a profit of two or three thousand rupees a year they would not care for it. This idea of becoming rich by a single stroke without persistent endeavours is the root-cause of the misery of the Bengali youths. In this connection Prafulla Chandra would often cite the example of Andrew Carnegie who from a

messenger boy rose to be one of the richest and greatest philanthropists of the world. According to him the boy who does not hesitate to enter a factory even in the capacity of a sweeper is sure to rise to a high position in future. He is never tired of repeating that there is no royal road to success. Fortunately all this advice has begun to bear fruit. The young men of Bengal are now coming to their senses and have realised that the problem of their poverty cannot be solved by clerical and other services. He has thus given a strong impetus towards the industrial regeneration of our country. This is, no doubt, a good augury for the future. I have often heard Prafulla Chandra compare in a pathetic manner the miserable condition of Bengali residents living huddled together in the dark and dingy dwelling houses in the worst part of the city of Calcutta to that of the Parsee and Bhatiya traders of Bombay, living in right royal style in palatial buildings situated in the best quarter of the city. The real cause of this difference can easily be traced to our adopting law, medicine or clerical professions as the only vocation of life, on the one hand, and to the trades of the province being

captured by the Europeans, Bhatiyas and Marwaris on the other. For want of nourishing food and airy and well-lighted dwelling houses the Bengalis as a rule have been steadily deteriorating. They have almost wholly lost all ambition and capacity for enjoyment of life. To use a medical term the entire nation is in a neurasthenic condition. And if we believe in the principle of the survival of the fittest then it must be admitted that we have been hastening towards extinction. These thoughts have been a constant source of anxiety to Prafulla Chandra for a long time. And as a remedy to this state of things he has been preaching the development of business-habits in the young men of Bengal. He never fails to help a young man bent on business enterprise with his valuable advice and in some cases even with funds out of his own pocket. As a notable instance of this mention may be made of the well-known book-selling and publishing firm of Messrs. Chuckervetty, Chatterjee & Co., Ltd., Calcutta. This firm was first started by a few of his pupils after completing their education and winning the highest degree (M.Sc.) of the University, inspired no doubt by his teachings

and helped by him substantially with both money and advice. He is still a patron of this Company. Besides the Bengal Chemical & Pharmaceutical Works he has been closely connected with various other limited companies either as a patron or as a director, doing good service to the country. Of these the following deserve special mention here :—

Bangiya Inland Steam Navigation Co. Ltd., Bengal Pottery Works Ltd., Calcutta Soap Works Ltd., Bengal Canning and Condi-ment Works Ltd., etc.

By the establishment or guidance of all these progressive manufacturing concerns he has opened new paths of employments to the people of the country. Struck by the wonderful success of his efforts in this direction, Mr. H. R. James, late Principal of the Presidency College, Calcutta, said, “where businessman failed, you, a teacher, succeeded so well.” The country will remain grateful to him and would proudly cherish his memory in its history.

CHAPTER II.

THE CAUSE OF BENGALI LITERATURE.

Prafulla Chandra is very fond of Literature, English, Sanskrit and Bengali and is a sound scholar and linguist. His articles in the

As a Scholar.

monthly journals are eagerly awaited and read with alacrity by the Bengali public. Every afternoon he devotes at least an hour to the study of literature and history. Among the English writers the old master-minds like Shakespeare, Milton etc., are his favourite poets and constant companions. In ordinary conversation he is fond of quoting from memory important lines from Shakespeare and Emerson. Nearly thirty six years ago, when a student of the B.Sc. class in the Edinburgh University, he wrote an essay competing for a prize on "The condition of India." It was later on published in the form of a booklet named "India before and after the Mutiny." In idea and style it reminds one of the writings of the great Indian Political Econo-

mist, Gopal Krishna Gokhale. His style is so pure, easyflowing and humorous that it can easily be mistaken for that of a true Englishman. He has a fair knowledge of Latin and French and can understand German pretty well. In the essay on India and in the History of the Hindu Chemistry many quotations in Latin, French and German will be met with. It gives an idea of his linguistic attainments.

Mention has already been made of his sound scholarship in Sanskrit^{as} as well. In compiling the history of Hindu Chemistry, a monumental work as already pointed out, he had to make a thorough and searching study of the various branches of ancient Sanskrit scriptures, epics, philosophical works, books on religion and medical science, and even many rare manuscripts collected from different parts of India. Besides, he always takes a special interest in ancient Sanskrit books. Above all, he is a devoted student of his mother-tongue, Bengali. Madhusudhan, Bankimchandra, Rabindranath and Saratchandra are his favourites. His acquaintance with the history of Bengali literature is very thorough. His presidential

address at the second Bengali literary conference at Rajshahi has been considered by all Bengali scholars as a composition of a very high order both as regards the depth of its thoughts and the elegance of style. In this he made a forcible appeal for the publication of scientific works in Bengali. At the present time he is a regular contributor to the monthly and weekly journals in Bengal of thoughtful articles on various topics, specially on the present movement of social reform, untouchability, bread problem and Khaddar. I have also come to learn from a very reliable source that he is at present engaged in writing a short history of modern Bengali Prose-literature. Considering his knowledge of English, Bengali and Sanskrit literature and history and the delight he takes in their study one would naturally think that he became a chemist by pure accident. His regard for his mother-tongue Bengali is so high that he always urges his pupils to publish the results of their investigations in Bengali. And in this connection he often cites the instance of the Russian Chemist Mendeleeff, the discoverer of the Periodic Law of Elements. Mendeleeff published an

account of this law in the Russian language. As a consequence, the chemists of the world outside eager to have first-hand information about this discovery from the original papers of Mendeleeff had to learn the Russian language. Prafulla Chandra also tells his pupils that if they desire to place their nation and national language on a high pedestal of honour they must follow the patriotic example of Mendeleeff. This furnishes us with a noble instance of his burning patriotism. We have often heard him quote from Madhusudan Dutta. 16, 375

“Oh my child a liberal stock of gems is
your mothers’ treasure,

“Why art thou then dressed to day in the
attire of a poor beggar?”

These two lines have been quoted on the title-page of one of his pamphlets, the *Rasayani Vidya*. His knowledge of history and archæology can best be judged from his history of Hindu Chemistry and his various speeches on those subjects. An excellent illustration of his knowledge of the history of Saracenic culture is afforded by his convocation speech recently delivered at the Aligarh

National Moslem University. It has been translated into most of the vernaculars of India and a verbatim translation has been published in a French journal.

CHAPTER III.

THE REMEDY OF SOCIAL EVILS.

Prafulla Chandra has devoted his whole life to fighting the superstitions of the Hindu society. **As a Social Reformer.** In Bengal he is known as a great social reformer. Of all the social evils untouchability moves him most. This evil has not only crippled society but sapped the manliness of individuals. Our slavery and slave-mentality have been perpetuated by it. The so-called talk of nation-building will, in his opinion, end in smoke until this black spot is removed from the social fabric. For the last twenty years he has therefore been struggling against this evil without remission. His regular contributions to monthly and weekly journals and his public speeches on the subject are too numerous to be enumerated here. He would be talking to his pupils on this subject in season and out of season and would admonish them humorously about it, and he does not shrink from castigating strongly those political leaders of the country who are

either indifferent or opposed to the reform of this social evil and yet would make a show of striving for their country's liberation. Can national character develop in a country, where a large section of the people is regarded by their fellowmen as no better than cats and dogs or, if anything, worse?

In his presidential address at the Indian National Social Conference held in Calcutta in the year 1917 he held up before the audience in strong and impressive words a complete picture of the inhuman hatred, fraud and falsehood that have been reigning supreme in our society in the shape of caste-system. The following lines from it will give a clear idea to the readers of the disgust and indignation which he feels against this evil custom prevalent in society.

“What was possible in Japan in 1871
 “is found to be impossible in India even
 “towards the close of the second decade
 “of the 20th century. Even now we find
 “that, as the saying goes, 12 Rajputs must
 “have 13 cooking pots, 500 congress dele-
 “gates require as many kitchen arrange-
 “ments. This at any rate is applicable to
 “our friends of the southern Presidency,

“who have worked out the problem to
 “metaphysical nicety in as much as they
 “have added a new category of contamina-
 “tion, namely the sight of the cooked food
 “of a Brahmin by a member of the
 “Panchama Class even from a distance,
 “say, by means of a telescope.”

“The problem of untouchability has
 “assumed a scientific aspect in these days.
 “If a Pariah crosses your threshold you
 “throw away your jar of drinking water
 “as polluted but ice and lemonade manu-
 “factured by the untouchables pass cur-
 “rent. A distinction conferred on a
 “member of our society becomes the
 “occasion for giving a dinner in the Town-
 “hall catered by Peliti and the recognised
 “leaders of the Hindu society take part in
 “the function and their names are pub-
 “lished in the morning papers; but when
 “on the occasion of a marriage or a *Sradh*
 “you are guilty of sitting to a feast with a
 “Christian or Moslem or even a Hindu
 “of the lower castes, you are threatened
 “with excommunication. Reason, logic
 “and common sense are thus scattered to
 “the four winds.”

Prafulla Chandra is a great advocate of female education and has for more than a quarter of a century been agitating for the spread of education among the women of Bengal. Even in his class-lectures he would often bring home to his pupils the importance of social reform in this direction by way of witty jokes. One of the many causes of our national degeneration, according to him, is the ignorance of our women. The truth of this statement will, of course, not be questioned by many. No good work can endure in a society where women are ignored and helpless. For national character is rarely possible without culture and education. And it is a universally admitted fact that in ninety-nine cases out of one hundred, the mother is the first teacher of the child. The turn she gives to the growing faculty of the child forms the foundation of its future character. Is it then possible for a mother without any education to build the future life of her child on a solid basis of love, truth and beauty? The foundation being weak, the superstructure is sure to give way under a shock ever so slight. Napoleon truly said "A nation is made by its mothers." Prafulla Chandra has often been heard to

remark that an illiterate and uncultured wife may prove to be a good cook, a good housewife, or a mother of healthy children, but she will never be able to participate in her husband's activities in the world outside; on the other hand, she is often a stumbling-block in his way. From the economic point of view also our national poverty is partly if not mainly due to the ignorance of our womenfolk. For, if half the population of a nation be illiterate and to that extent useless, the other half will have to maintain this idle half by their own labour. The social body becomes partially paralysed. Prafulla Chandra is ever ready to extend his sympathy and help to all efforts for the spread of female education.

He is an uncompromising opponent of early marriage. He has been preaching for a long time against its evil effects, which among other things, add to the want and misery of the poor people by burdening them with maintenance and education of children at an early age. In his opinion the custom is a serious obstacle in the process of nation-building. He attributes the large number of child mortality in the country to early marriage, poverty and want of female education. We have

heard him explain to his pupils half in jest and half in earnest how a girl-wife stands in the way of the husband's career and mars the happiness and beauty of family life. As an illustration of this he would now and then cite a few lines from Rabindra Nath's poem entitled "Balika Badhu" or "Girl-wife", where the girl-wife is represented as responding to the first fond address of her educated husband with a cry of "Oh! My heart yearns for my pussy cat at home" and as requesting her husband on another occasion to pluck her some plums from the tree in reply to his loving appeals. He thus gives an early warning to his pupils against the family unhappiness and the evil effects of early marriage. Really, where there is such a wide gulf in thought and sentiment between husband and wife in a family there can never be any peace and happiness. Such an illiterate girl-wife can never be a true companion to her husband in the manifold struggles of life.

He has likewise been agitating for the freedom of our women for a long time. The abominable *pardah* system which condemns them to the life of a prisoner in a dingy and

dark room situated at the remotest corner of a small house and impenetrable by light and air is, in his opinion, mainly responsible for the premature loss of their health and beauty and for the stunting of their mind. They have no status in society, no right to express their free opinion but have only to abide by the orders and decisions of man. This has not only enslaved them both in body and mind but has crippled the society as well. But for the early marriage of girls, and want of female education and female liberty the vicious dowry system which has brought so much misery in its train could never have prevailed in the Hindu Society of Bengal. In fact early marriage and *pardah* are the chief factors contributing so largely to the prevalence of hysteria, puerperal fever and consumption among the women of Bengal. These have been creating havoc not only among the females but have led to the weak health and short life of their children.

Prafulla Chandra is an ardent and relentless fighter against the old caste system of India. He strongly advocates intercommunal and international marriage and dinner. This caste system too is considered by him as

a serious hindrance to the progress of Indian nationality. In his article named "Nation building and its obstacles" he has clearly demonstrated the retarding and blighting effects of superstition and caste system on the growth of a nation. Fettered by manifold long-standing prejudices, dogmas and injunctions of ancient Shastras we have lost the freedom of our thoughts and efforts and have been converted into an immovable and inert mass. Thus not only political slavery but an intellectual slavery as well has demoralised the whole society.

CHAPTER IV.

COUNTRY'S CAUSE.

Prafulla Chandra is also an earnest student of economics and politics. **As a Student of Politics.** Mention has already been made of his brochure on "India before and after the Mutiny" written while yet a student in the University of Edinburgh. Its composition savours of high political wisdom and vast experience and can be easily mistaken for that of any eminent political scholar of the time. Sir William Muir, the then Principal of the Edinburgh University, remarked about the book, "It bears marks of rare ability." The prominent daily paper, *Scotsman* of Edinburgh, remarked "It contains informations in reference to India which will not be found elsewhere." That famous statesman and friend of India, Mr. John Bright, on reading the pamphlet wrote to Prafulla Chandra a long letter full of sympathy and good wishes for India.

The economic condition and the helpless state of India had long been telling upon his

mind since his early student life; and to remedy this to some extent he has devoted his entire life to work for the good of his motherland. His earnest endeavours after the solution of the bread problem, development of trades and industries in the country, Khaddar propaganda and similar efforts are a strong proof of his sincere and burning love for his motherland.

Prafulla Chandra has been a bachelor all his life, indifferent to wealth and power and is a sincere patriot. For the cause of his country he has sacrificed all pleasures of life and all prospects of worldly advancement. All his noble deeds can be traced to a deep and abiding patriotism. He yields to none of the nationalists in his love of country though he does not approve of all the methods of the latter. He is never afraid of criticising the Government severely for measures calculated to interfere with the peace, prosperity and welfare of his motherland. In his presidential address delivered at the annual session of the Indian Science Congress at Nagpur, he did not content himself merely with giving a history of the progress of science in India but in

As a Patriot.

strong and impressive language protested against the unjust policy of the Government giving preference to English recruits in the Department of Education and relegating the Indians to a subordinate position in the service in spite of their competence. This address made a great stir at the time and has advanced the cause of Science in India to no inconsiderable extent. I would like to quote here what the writer in "To-morrow" under the name of "Scientificus" referred to later on justly observes in this connection;—"This address has done more for the cause of science in India than possibly all his chemical researches and it is an open secret, and known to all who have watched the trend of events in the English scientific world that he has had to suffer for it." Besides, in his evidence before the Islington Public Service Commission and in his speech before the Congress of the Universities of the Empire as a representative of the Calcutta University he did not miss the opportunity of criticising in effective language the indifference of the Indian Government towards the proper recognition of Indian merit and efficiency. He never fails to accuse the Government on all

suitable occasions of glaring injustice in appointing raw English graduates of ordinary qualifications on fat salaries in the I. E. Service over the heads of experienced Indian professors of approved merit, who are thus made to rot as their subordinates, in the P. E. Service with a comparatively low salary. He finds fault with the Government for thus squandering away the poor tax-payer's money in order to provide employments for the undeserving unemployed at home. In his evidence before the Indian Industrial Commission he did not fail to attack the Government's apathetic attitude towards the development of Indian Industries. As a member of the All-India Chemical Service Commission he fearlessly gave expression to those opinions in a note of dissent. And it is rather strange that inspite of his constant attacks against several policies and measures of the Government, the latter has honoured him on many occasions in an unexpected way. But he rises above all worldly praise and honour by sheer strength of character and simplicity of life.

Though not associated with the present non-co-operation movement in all its aspects, yet he thinks very highly of certain items of

its programme. He is a strong advocate of Khaddar and Charka (use of hand-spun and hand-woven cloth). He is never afraid of entering his emphatic protest in scathing language against the policy of repression adopted by the Government towards the workers of the movement and the people who are bold enough to speak out openly against the Punjab atrocities. His entire energy has now been directed to popularising Khaddar and Charka in the country. Till recently he was not a member of the Indian National Congress, still all constructive work formulated in the Congress programme has automatically fallen upon his shoulders. At a time when most of the prominent Congressmen are in prison and while a considerable portion of the rest are falling back upon their old professions, the immense task of Khaddar and Charka propaganda which has been described as the economic salvation of the country has been undertaken with unabated vigour and enthusiasm by this old scientist of unassuming habits.

The main defect of the Bengali character consists in short-lived emotionalism and sudden impulses. But in the case of Acharyya

Prafulla Chandra we meet with a notable exception. He sticks to his post with unflinching zeal till success is achieved. So it is hoped that the present Charka and Khaddar movement will through his unceasing efforts meet with complete success. Even at this advanced age he has been found to walk during the rainy season from door to door in the remote villages of East Bengal on their slimy and water-logged roads with bare feet and all these for Charka and Khaddar. This has led many to think seriously that after all Acharyya Prafulla Chandra has given up his favourite pursuit of science and has taken to the Khaddar propaganda as the only duty and occupation for the rest of his life. And in fact only a few months back, one day, the Associated Press made an announcement to this effect. It should be mentioned here that he does not consider the Khaddar movement as only a part of the political programme laid down by the Congress. According to him the Khaddar movement is intended neither to boycott Manchester goods, nor to be used as a political weapon against the Government, but solely as a remedy for the miserable economic condition of the country and as

a corrective to our indolence. He does not recommend spinning for the lawyers, doctors and teachers and Government servants who are otherwise busily engaged. He appeals specially to the agricultural labourers who idle away half the year after the crop has been reaped and to the helpless widows and unmarried girls who can all contribute to the household expenses rather than be burdens on their parents and while away valuable time in brawls, gossips and sleep during busy hours of day. His calculations are very simple and are made as follows :—

If out of 45 millions of the population of Bengal we leave aside 3 crores (30 millions) and take it that the remaining one and a half crore only earn at least 2 pice per head per diem by spinning then in a month their total income amounts to $1\frac{1}{2}$ crore of rupees or in other words there will be a saving of 18 crores of rupees a year in the national wealth of Bengal. This would no doubt contribute to a great extent to the improvement of the condition of the people. Besides, according to him there is a moral aspect of spinning. It develops one's character, increases patience and devotion and trains the worker in self-

reliance. For this latter reason alone he advises the students to work at least for an hour on Charka every day. In fact the opponents of the Charka movement will find it very difficult to meet these arguments with proper reply. A few lines quoted below from his article on the "Message of Khaddar" will further explain his views on the subject.

. "I confess I do not understand the
 "world economics, but I can safely say
 "from direct experience of the village life
 "of Bengal, that a pair of Khaddar spun
 "and woven at home by the peasant or his
 "spouse at their leisure hours out of the
 "cotton that he grows around his humble
 "dwelling, means a morsel of rice more for
 "his child and a bolder face to meet his
 "creditor. These necessities that one
 "would have to buy at a town market, he
 "can find at home, cost-free if only he
 "would train himself to the habit of use-
 "fully spending his off-minutes. These
 "off-minutes by themselves have no econo-
 "mic value; no mill-owner or factory-
 "magnate would pay for them, but at the
 "end of the year, the tiller of the soil finds

"to his happiness that he is no longer
"naked."

"Khaddar stands for the habit of
"industry, for a deeper and significant
"type of National Organisation and in fact
"for a democracy without the venom of
"envy. Even if non-co-operation were
"interpreted differently the Khaddar
"movement should stand on its own moral
"and economic ground."

The whole thing can be very clearly and simply presented in a nutshell by quoting a few passages from his recent address on the opening ceremony of Khaddar Exhibition at Coconada in December, 1923.

"An easy, healthy and natural process of increasing the wealth of the country, and a smooth and automatic way of universalising the incidence of that wealth—that is what the 'Charka' represents."

In another passage arguing against the theory of competition he tells us,—

" that spinning be taken up as an essentially domestic programme, worked in every house-hold, out of cotton grown in the cottage compound, the thread woven into cloth either by the family or by the neighbouring

village weaver on the payment of a nominal remuneration, and intended for the use of the members of the family themselves. Just as kitchen-work is undertaken in every household by the members of the family and eatables are not indented or purchased by cash payment from any huge hotel or restaurant, in exactly similar a fashion should the clothing be provided for. The question of sale and purchase, price and competition, would simply not arise.

* * * * *

..... the aim should be to plant cotton in every house-holder's grounds, and out of the product of those plants the family's clothings should be manufactured. This should be the method of work ; prepare cloth, at least ordinary every day cloth, as you do your food, as a household requirement; abolish it as a marketable commodity, a subject of sale and barter. The competition bogey would then vanish into thin air."

Speaking against the question of high prices that is raised as a formidable objection by the critics against the popularity of Khaddar, in another passage he tells us;—

"..... when the spinning-wheel is hum-

ming in every house, when it is catering for the cloth in every family, the complaint of high prices will no longer be heard—in fact the question of prices will not crop up at all. There need not then be the fear of competition with cheaply turned out foreign piece-goods. And so long as that happy state of things is not reached, I think it is not asking too much of our patriotic countrymen to sacrifice something in the shape of higher prices for the support of home-made goods. Ours is not a national government, ever on the alert for the protection of nascent industries; we must substitute for state-imposed protective tariff, our own preference of our indigenous products.”

In order to reduce the cost of Khaddar production he has been preaching for the cultivation of cotton in every household and has himself been making arrangements for the distribution of cotton seeds. He has opened a centre of Khaddar and Charka propaganda in his native village with the help of a few educated and young enthusiasts in the cause and has also made a free distribution of hundreds of Charkas in his own village. In illustration of his devotion to Khaddar work,

I would like to quote here what *Swarajya* of the Congress week (1923) writes about him and a passage from an article in the *Servant* of January 2, 1924 :—

“Besides all these politicians there was among the distinguished visitors one at whose gate visitors of all kinds thronged to pay homage. That was Acharyya Ray, the saint of science and the apostle of Khaddar. The one anxiety of this venerable figure who has spent a whole life time in the furtherance of scientific research, is that our Congress politicians in their wordy discussions about unimportant things may forget the great national importance of Khaddar. Khaddar has become what even chemistry was not to Acharyya. It has become a grand passion with him. I had two lady friends with me when I went to see him. He blessed them lovingly but added that he would not have taken that liberty unless he had seen them wearing Khaddar. It is inspiring to see him and if it ever was true what Macaulay said of Chatham that no visitor can return from him without being inspired, it is certainly so with Acharyya Ray.”—*Swarajya*.

“Acharyya Ray has however lost his sleep over Khaddar. With almost an unparalleled enthusiasm he has been working day and night for the popularisation of Khaddar in Bengal. Already he has done a good deal to that end in the flood-stricken areas, and the response that he has by his untiring activities evoked in those devastated districts is as hearty as it is instructive. Many in those parts have already taken to spinning and what with the pleasureable pastime that it affords to millions and what with the extra income that it fetches into their pockets, it bids fair to have already returned to its old pristine glory in those places where it has been given a methodical trial. Khaddar can not but be popular with the masses if only the leaders, whose love and solicitude for them have rather been protested too much, set themselves seriously and sincerely to it. It remains to be seen whether the youngmen of Bengal will care to listen to the exhortations of Acharyya Ray and agree to live and work up to his instructions “if only out of love, you, educated men, would cease to be clothed by foreigners the millions would get a morsel of food, for your example will filter down

and help to usher in a new era in our industrial, economic and also assuredly in political life.”—*Servant*.

Some critics who ought to have known better have taken Dr. Ray to task for now and then leaving aside his test tube and plunging into the troubled water of politics. The following extract from an article which recently appeared in “To-morrow” is a crushing rejoinder. The writer who hides his identity under the *nom de plume* of “Scientificus,” is, we have reason to believe, one of the most distinguished students of science of whom the whole of India may well be proud.

“A keen student of past and contemporary history, he (Dr. Ray) knows that nothing is more fatal to the development of a nation than political helotry and he knows that men of his own profession, placed in similar circumstances, have thought in a similar strain. “To take some examples, during the wars of Italian Independence, when the voice of Mazzini was raising new hopes and new ideals in the minds of the Italian people, Canizzaro, the eminent chemist, “shut up his laboratory, shouldered his

"musket and marched to take his place
 "amongst the levies of Garibaldi. History
 "is full of such examples. When the
 "American War of Independence broke
 "out, the great Franklin laid aside his
 "experiments, and undertook a voyage
 "across the Atlantic to enlist the sympathy
 "of France on the side of his country.
 "During the recent great war, scientists
 "belonging to all the warring nations laid
 "aside their work, and turned their ener-
 "gies to the service of the country. The
 "pages of the war history are, unfortu-
 "nately, too full of records of heroic self-
 "sacrifice of many promising scientists,
 "and of these, probably, none is more
 "tragic than the story of young Moseley.
 "Moseley was a young man of consider-
 "able means, who had graduated from
 "Oxford two or three years before the
 "outbreak of the war, and had turned to
 "research work in Physics. Of the im-
 "portance of his work, suffice it to say,
 "that had he lived only for a few months
 "more just to get his work known on the
 "continent, he would have obtained the
 "Nobel Prize in Physics. But at the out-

“break of the war he felt the call of his
 “country so strongly that he laid aside all
 “these interesting works, and long before
 “conscription was introduced, enlisted in
 “the Dardanelles Campaign where he was
 “shortly afterwards killed by a bullet.

“We need not labour much to prove
 “that in the present state of our country,
 “‘Science can wait, Swaraj cannot.’ It is
 “indeed a matter of sincere gratification
 “that our countrymen are devoting them-
 “selves in increasing numbers to the
 “pursuit of science—a matter for which
 “nobody has laboured more strenuously
 “and devotedly than Dr. Ray himself.
 “But what is the contribution of India
 “after sixty-six years of University educa-
 “tion, compared to that of an independent
 “country like Japan, which began just
 “a generation after. Anybody who has
 “watched the contemporary history of
 “these two countries, will admit that
 “political bondage and economic servi-
 “tude is the root of India’s poor success.
 “Our scholars have been given no oppor-
 “tunities, no facilities. They have been
 “always relegated to a subordinate posi-

“tion, and every effort has been made to
“repress their abilities.

“If we had Swaraj, our contributions
“would have, by this time, equalled those
“of England or Germany.

“But apart from the academic side
“what records have the Indians to show
“regarding the application of science to
“the problems of national and economic
“importance which have made Western
“countries what they are to-day?

“The policy of our rulers has been
“consistently against the dissemination of
“scientific knowledge amongst the masses,
“against the establishment of Engineering
“and technical institutions where Indian
“students can learn the different branches
“of industrial sciences. Couple with this
“the fact that foreigners have been given a
“free hand to exploit the mineral resources
“and industrial possibilities of the coun-
“try.

“Under such a political system even
“if every college of India were to contain
“a scientist of the eminence of Sir J. C.
“Bose, or Sir P. C. Ray, they could not

“prevent the country becoming poorer every day.”

The surging waves of the New National Movement are constantly beating against the doors of his laboratory. It is true indeed that he did not plunge into the movement at the very outset but has been gradually drawn into the more constructive parts of it. And his countrymen have amply repaid him by robbing him of the distinction of Knighthood and omitting it in the daily, weekly and monthly papers. He is now always spoken of and addressed as Doctor or Acharyya (*i.e.* venerable preceptor) and never as “Sir” Prafulla Chandra. How far this forward march of nationalism has penetrated into his mind is apparent only to his associates in the laboratory. Every day we find him buried in heaps of letters and notes of request for articles from editors of various nationalist papers (daily, weekly and monthly) belonging to different parts of India. And every day we find about twenty to thirty persons waiting for an interview with him. It is really strange how he keeps the balance of his mind amidst all these diversions. Often we have asked him why he allows his precious time to be spent in this

manner. He replies in a serious tone, "It is true that I am essentially a chemist but if I keep myself entirely aloof to-day on that plea from this national movement then the future generation will not hesitate to call me selfish and take me to task." Indeed, he is sometimes found to exclaim "Science can afford to wait but Swaraj cannot." But it is not to be inferred from this that he is at present neglecting his research work in chemistry. Far from it. Never in his life did he discover such a large number of new facts in chemistry as he has done during the last two years.

Amidst all these multifarious duties he has never been found wanting in enthusiasm for applying himself heart and soul to the relief of the people suffering from any accidental or natural causes. As an example, the last Khulna famine can be cited first. During this famine it was by his efforts alone that a sum of over 3 lacs of rupees was collected in spite of the Government announcement that there was no need of relief. One cannot but be amused to read the Government report which among many other things stated that "Milk can be had for the mere asking and

**As a Humanitarian and
Philanthropic Worker.**

fruits in abundance and fish in the river ready to be netted" when very reliable reports of starvation, semi-starvation and even death and suicide from starvation in some rare cases were being constantly received from the affected area. But in response to his appeal money came flowing in even from distant places. His second effort in a similar cause is even more glorious and has beaten previous records of non-official relief work. The heavy downpour in North Bengal in the beginning of the last Durgapuja holidays (26th and 27th September 1922) caused a serious and extensive flood in North Bengal, which inundated almost the whole of Rajshahi district and considerable parts of Bogra and Pabna. The water level rose up to seven or eight feet in places. Breaches on the railway embankments were caused at various places. Most of the dwelling houses with their contents, crops on the field and the cattle in the affected area were simply wiped away by the rush of the water-current. According to both the non-official and Government calculations about 1,800 sq. miles were covered by the flood; almost all the dwelling houses of this area were washed away, a loss of 40 to 50 human lives

occurred, 12,000 heads of cattle were lost and about 75% of the growing crops were destroyed. The residents of the afflicted area had to take shelter on high lands near the railway line and elsewhere. This at once appealed to the liberal and tender heart of Acharyya Prafulla Chandra and under his leadership and guidance a relief fund was immediately started and a committee formed known as the Bengal Relief Committee. The achievements of this organisation are a matter of pride and glory to Bengal. It was simply due to the charm of his name that the whole of Bengal, nay almost all India and distant places outside India where there are Indian settlers, had been wonderfully awakened to a strong sense of sympathy. Even Indians from Japan and Africa sent their quota of contribution for this noble cause. On the streets, roads, and lanes of Calcutta as well as in the mofussil towns and villages of Bengal, young men were found marching in procession and collecting money for the relief fund for a period extending over one month. The Zenana ladies of the Hindu household gave away their valuable ornaments and clothes without any hesitation. Even the fallen women of the towns collected large sums

and made them over to the relief fund. Heaps of old and new cloths, blankets and plates etc., were collected and distributed regularly. The total collection amounted nearly to 7 lakhs of rupees. Such an awakening of the masses is simply unprecedented in the history of Bengal. Over 300 volunteers had been at work at the relief centres. Those who have visited the Palit Research Laboratory, the place of Prafulla Chandra's activity at that time, could not but be struck with the wonderful organisation of the relief work. I need not dwell at length on these details which were regularly published in daily papers. It is not too much to say that the soul of this stupendous organisation was Acharyya Prafulla Chandra. It was simply by the power of his personality and character that this noble endeavour has been brought to such a wonderful success. The achievement of this relief will ever remain engraved in golden letters in the national history of Bengal. This noble example of love and sympathy so brilliantly set by Prafulla Chandra will help to elevate the national prestige. In this connection I cannot resist the temptation of quoting a few lines from what an English correspondent of

the *Manchester Guardian* wrote about him and his relief work.

“The enthusiasm of the response to Sir P. C. Ray’s appeal was due partly to Bengal’s natural desire to score off the foreign Government, partly to genuine public sympathy with the sufferers and very largely to Sir P. C. Ray’s remarkable personality and position. Sir P. C. Ray is a Scientist of world-wide repute. I do not think he can be said to be an orthodox non-co-operator but he is a very strong nationalist and a very strong critic of Government. He is also a real organiser and a real teacher. It was he who made the Calcutta College of Science. I heard a European saying, “If Mr. Gandhi had only been able to create two more Sir P. C. Rays he would have succeeded in getting Swaraj within this year.” A Bengali student told me “If any Government officer or any of the non-co-operating politicians had called for subscriptions the public would not have given three farthings. But when Sir P. C. Ray calls every one knows that the money

“will be spent and well spent and not
“wasted.” ”

Further, in addition to the above engagements, Prafulla Chandra is
As a Public Man. got hold of by various Societies, Associations, Clubs, Institutions and Samities both in Calcutta and in various other parts of Bengal and India to preside over their annual special sittings. It is for this reason that he once spoke out in agony in Madras “I now see that I have made myself the property of anybody and everybody.” We have seen him paying every now and then the penalty for this. I would rather like to quote here a few lines from what Sir T. E. Thorpe, the famous English Chemist, wrote about him in *Nature*, March, 1919:—

“He has succeeded in founding a school of
“native chemists capable of attacking
“and elucidating the modern scientific
“problems. He has roused and quickened
“the Bengali brain from the torpor which
“had overtaken it, and by his example and
“precept has proved that the Hindu only
“needs training, encouragement and direc-
“tion to revive the ancient glories of his
“race in philosophy and science. The

“success of the commercial undertaking
“which he initiated also indicates that the
“Bengali is not lacking in power, applica-
“tion and steadfastness of purpose needed
“to conduct successfully a business enter-
“prise.

“It was to be expected, therefore, that
“Sir P. C. Ray should, as he expressed it,
“sooner or later find himself “the property
“of anybody and everybody”, and be
“called upon by various educational insti-
“tutions, by conferences, and by the perio-
“dical press and leading newspapers
“interested in the social reform and
“development of the political and indus-
“trial life of India to address his country-
“men on subjects which so closely affect
“their national welfare and prosperity.”

We have often found the officers of many limited Companies started and guided by him, waiting for his advice at the door of his laboratory when he is engaged in research work. He promptly communicates to them his opinion on many complex problems. At times when the need for money arises in financing the concerns with which he is connected as a Director, he runs to the Bank and mortgages

his own credit or he goes to experts like Sir R. N. Mukherjee for advice. Many might think that after the retirement from Government service his work has considerably been lightened, but, in fact, it has increased ten-fold.

CHAPTER V.

THE MAN AND HIS CHARACTERISTICS.

Prafulla Chandra's charity flows constantly as a current and is known to all. He keeps only a small fraction of his monthly income for his personal expenses and spends the rest on various noble purposes. His own needs are very limited. Dressed with a piece of cloth 9 cubits long which has been at present further reduced to $8\frac{1}{2}$ cubits, of coarse home-spun Khadi, and a simple coat or shirt on the body, he performs his multifarious duties day after day. His bed consists solely of a light mattress, one pillow and a bed-sheet spread on a Khatia. A few almirahs packed with books make up the entire furniture of his room. Every year he pays a number of monthly stipends to poor students. The sight of sickly students excites his pity and makes him exclaim—"How will these poor emaciated fellows face the struggle of life and what good will they be able to do to their country?" On the other hand, students with vigorous health

and energy never fail to extort his admiration. He simply embraces them out of joy and tests their strength with a smart stroke on their chest with his fist. For the spread of education in the country his purse is always open. The City College of Calcutta and the H. E. School at his native village received considerable help from him. Recently the Bagerhat College has been established with his help and is being conducted under his guidance. He has made a gift of 10,000 rupees for the spread of primary education in his village and has established a Council of Education for the purpose. Only a year ago in order to perpetuate the memory of the great ancient Hindu Chemist Nagarjuna, he made a donation of Rs. 10,000 to the University of Calcutta for the purpose of awarding a prize called a Nagarjuna Medal to the best research worker in chemistry every year. The honorarium sanctioned by the University of Madras for lectures delivered by him in that University in 1918, was offered back by him to the University for creating an annual prize called the Wedderburn prize to be awarded to the best worker in chemistry on original lines. He also made a similar gift to the Punjab University on a

similar occasion. These are strong indications of his earnest desire for the spread of science in India. There are other private and regular charities which I am not at liberty to enumerate here. But I cannot help mentioning here another noble example of his magnanimity. According to the rules of the Palit Trust, the senior Palit Professor of Chemistry has to retire as soon as he completes his sixtieth year, but the trustees can extend the age limit if they so desire. Prafulla Chandra on the completion of the 60th year sent a letter of resignation of his post to the University authorities. But the latter re-appointed him for five years more. At this Prafulla Chandra wrote to the authorities a reply which speaks highly of the nobility of his heart, and a steadfast devotion to the study of chemistry. The purport of the reply is "I am desirous, no doubt, of working on my favourite subject of chemistry in the Palit Research Laboratory for the rest of my life, but I am unable to accept any further remuneration from the University for the same. As the authorities have been kind enough to re-appoint me as Palit Professor of Chemistry for a further period of 5 years, I return the

monthly salary of Rs. 1,000 due to me back to the University to be spent for the Chemical Department of the Palit Laboratory in the best possible way that may be considered by it. But the most generous and crowning sacrifice of his life was yet to come. Till very recently people were absolutely kept in the dark about this culminating act of his life. If I be permitted I would call it his "Renunciation",—and a renunciation, which, as is his wont, he tried his best to screen from the public. But it leaked out as such great deeds are always destined to. He had been spending throughout his life most of his income in countless charities and in promoting the welfare of his country, depriving himself of all but the bare necessities of life. And what little had been left after all these noble deeds of unceasing sacrifice was secretly made over by him in a deed of gift for the organisation and propagation of "Khaddar" industry in Bengal, and a committee of Trust has been formed consisting of gentlemen of unimpeachable character who possess an unbounded enthusiasm in the cause. This amount which includes his entire shares in the Bengal Chemical and Pharmaceutical

Works, Ltd. and in other companies has been estimated at 56,000 rupees approximately. Thus a life full of activities, suffering and sacrifices realizes itself finally and most fittingly in this supreme act of sacrifice—a sacrifice untainted by vanity and unsullied by any desire for fame, but promoted solely by a strong and sincere emotion to help forward the cause of national regeneration. These noble examples of his labour and sacrifices—a labour the flame of which will burn forever with brilliance till the last day of his life, and sacrifices which very few will ever be able to emulate,—will remain a permanent source of inspiration not only to the present generation but to posterity as well. It will not fail to radiate its wholesome influence over the whole of India. Blessed is Bengal that she can boast of a Prafulla Chandra Ray as her son !

Prafulla Chandra lives a life of celibacy and saintly purity. He has earned a good deal of money in his life, but has never indulged in the luxuries and comforts of the world. He considers that for a student celibacy or Brahmacharyya is essentially neces-

His Character and Mode of Living.

sary. In his opinion one who is early burdened with a family in this poor country will never be able to worship the Goddess of Learning with whole-hearted devotion and earnestness. Any married student is therefore seldom helped by him with money or otherwise. An excellent expression of his views in this matter will be found in his Convocation address recently delivered at the Aligarh National Muslim University—The Jamia Milia Islamia from which I cannot but quote the following few lines for the enlightenment of my readers.

“I would even go further. I would, if
 “I could, revive the Brahmacharyya tradi-
 “tion of our ancient schools, that ascetic
 “discipline that laid the foundation of a
 “virile and self-contained manhood that
 “enabled the youngmen in after life to
 “stand foursquare to all the winds that
 “blew. I would like that the students
 “should discard all luxuries, should clothe
 “themselves in strong home-spun Khad-
 “dar, should cook their own food, should
 “sweep their own rooms and should wash
 “their own clothes and utensils and should
 “keep everything tidy.”

Prafulla Chandra's life is an ideal of simplicity. His diet is simple, his dress and habits are also simple and his entire heart is an image of childlike simplicity. But on the other hand, his spirit of independence and devotion to truth is unparalleled. He never submits to injustice simply to satisfy anybody however high may be his position in life. Guided simply by his own conscience he has been struggling throughout his life against enormous odds. Fame has never been able to tempt him. Honors both from the Government and the people have been heaped upon him in an unexpected way. We have seldom seen him go to pay his respects to any high officials or to attend any levees or Durbar.

Prafulla Chandra's patience and perseverance are simply wonderful. He never leaves anything half-done after he has undertaken it. His zeal never flags, nor is his spirit damped by insurmountable difficulties and obstacles but he pursues his objects till success is achieved, "To do or to die" is the motto of his active life. His principle is never to discuss the possibility and impossibility of a task, once he has set himself to it.

He has great detestation for indolence,

According to him this vice has undermined the health and happiness of our Bengali-home and has been eating into the vitality of the nation itself. In Bengal, all trades and business are in the hands of non-Bengalis. Being lovers of ease and comforts the Bengalis are roaming about in search of petty appointments as clerks. In consequence, starvation, semi-starvation, malaria, mal-nutrition and all sorts of wasting diseases are staring them in the face. Even the students of Bengal are so very idle that they care very little to know anything outside their text-books. This makes our training so narrow and limited that even a B.A., or an M.A. of the University of Calcutta is often perfectly innocent of the world's general literature and history. An M.A. student on being asked about the probable date and causes of the American war of independence and civil war and the war of independence in Italy failed to give correct answers, and this very student stood rather high in the University Examination, of course in his own subject. This is true of the average educated young men of Bengal. He does not care for anything that is not likely to be asked in his examinations. Prafulla Chandra has

given a graphic description of the way in which the young men of Bengal waste their valuable time in indolence, gossips or day-naps in his famous article on the "Misuse of Bengali brain." He considers morning to be the most valuable time and he who idles away morning hours must be, in his opinion, a very miserable fellow. He often remarks that one hour in the morning devoted to study every day will easily make one a master of a vast stock of facts and knowledge at the end of the year. His logic is, no doubt, infallible, for, "Little drops make the ocean." Moreover, the real measure of study consists not in the amount of time devoted but in the concentration of the mind.

Every morning from 7 A.M. to 8 A.M. he is busy in his study and cannot tolerate any intrusion or disturbance during this time. In his opinion there should be a sanctity in one's study as in the temple of God; the following lines of Emerson are often quoted by him in this connection :—

"At times the whole world seems to
 "be in conspiracy to importune you with
 "emphatic trifles. Friend, client, child,
 "sickness, fear, want, charity, all knock at

“once at thy closet door and say,—“Come out unto us.” But keep thy state; come not into their confusion. The power men possess to annoy me I give them by a weak curiosity. No man can come near me but through my act. What we love that we have, but by desire we bereave ourselves of the love.”

Another favourite passage from Emerson, which Dr. Ray often repeats from memory and which he tries his best to live up to, is,—

“It is easy in the world to live after world’s opinion; it is easy in solitude to live after your own; but the great man is he who, in the midst of the crowd, keeps with perfect sweetness the independence of solitude.” “One thing at a time and do it well” is his motto. Like King Alfred he definitely apportioned his time for different purposes and does everything in its proper time. Such punctuality and proper use of time is rather surprising in the case of a Bengali. Though a life-long invalid, a sufferer from indigestion and insomnia for the last 30 years, living on spare diet, yet he has been able to achieve wonderful success in manifold fields of activity simply by his method, punctuality and wholeheart-

ed devotion to a cause. On account of his weak health he rigorously avoids all brain-work after nightfall. Every evening he drives over to the maidan, takes a long walk and spends there an hour or two among friends and pupils in light pleasant talks and random discussions about science, literature, politics, economics and other topics. In dress and habits he is an out-and-out Bengali, but in regularity, punctuality, sense of duty and method of work he surpasses even an Englishman. This ought to serve as an example to the indolent Bengalis.

Our idea about the value of time is so very poor that we often spend two hours in unnecessary talk over a subject, which could really be finished in two minutes. He has often been heard to say that an average Bengali should work ten times as much as he ordinarily does. Many people might wonder at the fact that with a frail frame, a weak sickly man like him could meet the conflicting claims of such widely divergent subjects as chemistry, industry, literature, history, social reform, politics, education, swadeshi and Khaddar. It is really surprising no doubt. But the deep spiritual impulse constantly

throbbing within his heart made it possible for him what appears as a miracle to others. He follows as the guiding principle of his life the instructions of the Bhagabat Gita,—

“ कर्मस्येवाधिकारस्ते मा फलेषु कदाचन,
मा कर्मफलहेतुर्भूर्मा ते सङ्गोऽस्त्व कर्मणि ॥
योगस्य कुरु कर्माणि सङ्गं त्यक्त्वा धनञ्जय,
सिद्धसिद्धयोः समो भूत्वा समत्वं योगउच्यते ॥ ”

Like water on the lotus leaf he keeps himself aloof from all worldly objects though performing the duties of life. This is the reason why any success or failure has never been found to perturb the peace of his mind. He is also never tired of work and has often been heard to remark,

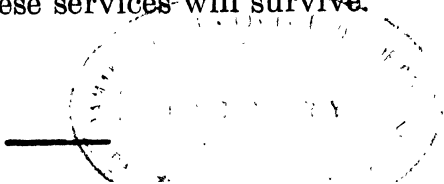
“My appetite simply grows on what
“it feeds upon.”

Prafulla Chandra has by his plain living
and sincerity endeared him-
Conclusion. self to all sects and com-
munities. With his many-sided genius he has
been rendering inestimable service to the
country, the memory of which will ever be
cherished by posterity and his place will
undoubtedly be assigned among the great men
who have contributed to the making of

modern India. He has contributed greatly to the establishment of a new era in India by a harmonious fusion of the lofty ideals of the ancient Hindu culture with the healthy and progressive aims of the modern scientific civilisation of the West. In fact, he has made a sacrifice of his noble life in order to remove the manifold obstacles to the all-round progress of his country. It is true, indeed, that he will not live long enough to reap the fruits of his life-long endeavours, but the inspiring memory of his sacrifice and work for the elevation of his motherland will ever remain engraved in golden letters in the history of the country. Bengal can justly be proud of such a noble son.

No truer words can be said about his life-work than those of Sir E. Thorpe at the end of an article in *Nature*.

“Her elevation will not come in Sir “P. C. Ray’s time. A small, spare man, in “feeble health, and a confirmed dyspeptic, “he will be spent in her service. But the “memory of these services will survive.”



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